

EDWARD DU

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SUMMARY

- Computer science student with work experience in software engineering and research.
- Strong interest in computer vision, data science, and flight software.

EDUCATION

M.S., Computer Science

Anticipated Graduation: December 2024

California Polytechnic State University, San Luis Obispo, CA

B.S., Computer Science, minor in Data Science

Sept 2019 – June 2023

California Polytechnic State University, San Luis Obispo, CA

3.721 GPA

Relevant Coursework: Linear Algebra, Data Science Capstone, Computer Vision, Deep Learning, Artificial Intelligence, Introduction to Database Systems, Introduction to Distributed Computing, Advanced Algorithm Design and Analysis

TECHNICAL SKILLS

Proficient: Python(NumPy, Pandas, scikit-learn, tensorflow, PyTorch), Java, React.js

Familiar: C, C++(OpenGL), R, HTML, CSS, Node.js, Apache Spark, Kotlin, Racket, Hadoop, CUDA, SQL

EXPERIENCE

PolySat, San Luis Obispo, CA: Software Engineer

March 2021 - September 2023

- Worked on the ADCS subsystem's star identifier algorithm using the Yale Bright Star Catalog v5 to generate the database.
- Researched filesystem and hardware upgrades for a new system board (Linux 2 to Linux 5).
- Optimized calculations on luminosity and RGB from photos to save computation time.
- Leveraged knowledge in C, Python (NumPy, SciPy), and Git.

GATO365/Cal Poly Statistics Department, San Luis Obispo, CA: SWE Intern

June 2022 - September 2022

- Created an interactive R Shiny web app to teach statistical inference methods, helping 100+ local students.
- Accessed the Census Bureau's API to map demographics for US counties.
- Leveraged knowledge in R (tidycensus, plotly, shiny).

Cal Poly Engineering Department, San Luis Obispo, CA: Undergraduate Researcher

June 2021 - September 2021

- Created a trade study to determine which type of flash memory to use on the new system board.
- Wrote code to perform periodic CubeSat watchdog taps and 22-day reboot cycles on the MSP430.
- Developed a capabilities document and a work-breakdown structure for hardware upgrades by subsystem.
- Leveraged knowledge in C, Assembly, Linux OS, and Systems Programming.
- Project Overview Link: <https://surp.calpoly.edu/2021/next-gen-avionics/>

PROJECTS

3D Pano Inpainting: Building a VR Environment from a Single Input Panorama

June 2023 - Present

Branching off and exploring a diffusion-based inpainting method and a tri-plane representation of panoramic inputs.

- Generated a dataset with 5 scenes based on MatryODShka-Replica360.
- Introduced a novel pipeline that creates a mesh capable of supporting 360-degree view synthesis from a single equirectangular panoramic image as input.
- Used a layered Depth Image (LDI) representation that removes stretching artifacts from textured meshes.
- Leveraged knowledge in Python (PyTorch), C++ (OpenGL, Pangolin)

Project Link: <https://eddyiwnl.github.io/>

HDR-NeRF--: Learning HDR View Synthesis Without Known Exposure Parameters

September 2022 - Present

Our paper got accepted for presentation at the CVPR 2023 workshop, XRNeRF: Advances in NeRF for the Metaverse.

- Introduced new constraints to the tone mapping function to ensure monotonicity.
- Ensure that exposure parameters are learnable and optimized exposure parameters separately for each color band.
- Outperformed previous works such as NeRF, NeRF-W, HDR-NeRF, and HDR-Plenoxels, in average PSNR, SSIM, and LPIPS.
- Newest NGP method beats HDR-NeRF and HDR-Plenoxels in efficiency by 90.335x and 15.317x, respectively.
- Leveraged knowledge in Python (NumPy, Pandas, PyTorch), CUDA, NeRF

Florida Estuary Biodiversity Analysis - Smithsonian Institute

January 2023 - June 2023

Collaborated in a team of four to develop an object detection model and desktop application that classifies and counts the specimen in their benthic soil samples.

- Created a desktop application with Electron that integrates our object detector and allows for manual quality control.
- Used Photoshop tools (blurring, noise generation) to create artificial data that mimics true data.
- Hypertuned a Faster R-CNN(ResNet-50 RPN Backbone) that yielded a mAP of 0.583.
- Leveraged knowledge in Photoshop, Python (PyTorch Lightning, NumPy), React.js, and Electron.

Github Link: https://github.com/eddyiwnl/Ecology_Application